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ABSTRACT

The project objectives were: (1) to assess existing industrial upgrading practices in an Atomic Energy Commission contractor organization, (2) to design new alternative upgrading methods, (3) to experiment with new upgrading methods, (4) to plan for utilization of proven upgrading programs, and (5) to document and disseminate activities. A twelve page section of the report is in the form of a separate paper, titled The Validity and Utility of Simulation Techniques, discussing the operation of an assessment center for employee upgrading. A further 30 pages appear to be from a booklet explaining how the assessment center is used for identification of first-line supervisors. Six pages summarize the impact of management practices, training programs, legislation, collective bargaining agreement, and employee mobility on employee upgrading. The final three pages briefly evaluate the success of the assessment center and the opportunity counselling it provided.
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UPGRADING IN AN INDUSTRIAL SETTING
(FINAL REPORT)

OAK RIDGE ASSOCIATED UNIVERSITIES

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
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February 1974

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16. Abstracts This is the third, and final, report of a study conducted by the Manpower Development Division of employee upgrading in an industrial setting. Objectives of the study were: (1) to assess existing industrial upgrading practices in an Atomic Energy Commission contractor organization to identify factors that significantly influence rate and amount of upgrading; (2) design new alternative upgrading methods; (3) experiment with new upgrading methods; (4) plan for utilization of proven upgrading programs in additional AEC contractor organizations; (5) document and disseminate activities. Report describes operation of the Assessment Center and use of opportunity counseling. Discusses the validity and utility of simulation techniques. Contains summaries of the two preceding reports of the study, and conclusions and recommendations.			
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INTRODUCTION

The format of this report is intended to provide for the maximum use of the written outputs of the study by different audiences. Segments of the report are printed as independent brochures targeted to specific audiences according to interest. These brochures are designed as utilization materials.

This final report is submitted to the Office of Research and Development, United States Department of Labor by Manpower Development Division, Oak Ridge Associated Universities (MDD) in fulfillment of contract conditions. In this form the report will have limited distribution. Parts of the report are published for much broader distribution, notably the brochure explaining the assessment center approach for the identification of management potential. The brochure lists other publications in this report that will be available separately upon request. This somewhat unusual strategy is designed to support both the fourth and fifth objectives of the project (below), the utilization of proven upgrading programs and the documentation and dissemination of activities.

All materials in this report were generated as part of the study of employee upgrading in an industrial setting. The project was initiated on October 1, 1971, and ended December 31, 1973. During this 27-month period, three types of research and development activities were conducted: (1) data gathering and analysis, (2) applied experimentation, and (3) utilization.

The project objectives were:

1. to assess existing industrial upgrading practices in an Atomic Energy Commission (AEC) contractor organization in order to identify those factors that significantly influence the rate and amount of upgrading;
2. to design new alternative upgrading methods developed with the effective participation of management, union, MDD staff and individual employees aimed at improvement of upgrading efforts;
3. to experiment with at least three new upgrading methods;
4. to plan for the utilization of proven upgrading programs in additional AEC contractor organizations; and
5. to document and disseminate activities.

The accomplishment of the first objective is documented in the report of Phase I, Part 1, which is summarized in Section I of this report. This analysis was intended to lead Manpower Development Division and the cooperating industry to conclusions about the current upgrading system and to suggest new alternatives that could be tested. Submission of the first report to the company met with mixed reactions.

At top management levels, support was found for continuation of the project directed at accomplishing the second and third objectives above. However, management wanted assurances that the project would not disrupt routine work efforts. One of the company's three plants who participated in the study at the outset was willing to implement procedures and practices that required change.

For some time prior to MDD's intervention in the company's upgrading system, certain top level managers were concerned with selecting first-line supervisors. Their concern had resulted in the implementation of an experimental assessment center. MDD found the assessment center approach to be infrequently used and lacking in certain respects. As originally used in the plant, an assessment center session was only convened when a promotion to first-line supervisor was available. Candidates were highly screened before participation in the center, and very few sessions had ever been conducted. The procedures for assessing a candidate's performance were lengthy and clinical in character. This situation, in conjunction with the projection that this plant was about to undergo a sizable expansion, appeared to be the basic reason this plant supported the second objective, to design new upgrading methods from a basis of cooperation among management, union, upgrading project staff and individual employees.

MDD and plant personnel determined that modifications in the assessment center approach could have two immediate positive effects. If a reduction in the length of time required to conduct the center sessions could be accomplished, more candidates could be processed. Such a change was important since promotional opportunities were forecast in the near future for a large number of employees. Another implication of reducing the time required was a concomitant reduction in cost per candidate. MDD staff recognized that if efficiency in scoring could be realized, time could be reduced. The character of clinical discussion which required a great deal of staff time was viewed as the one area in which time reductions could be made without sacrificing quality.

Modification of the scoring system also permitted the staff to address another serious shortcoming of the procedure as it then existed, its lack of demonstrable objectivity. This problem could be approached concurrently with the one of time-efficiency by designing the new scoring procedures which would better follow principles of psychological measurement and that would yield data to eventually answer questions of validity.

The company's management was also aware of a morale problem among one division's technicians. MDD's proposal to alleviate the problem was accepted by company management, and entailed making available opportunity counseling to employees after their participation in the assessment center. The counselor used information about the employee gathered in the assessment center, information from an interest inventory and other paper-pencil aptitude tests, and information about job openings. During the counseling sessions, an interview was conducted with each employee. The purposes of the interview were to get each individual's reaction to the diagnostic process, to explain the information collected about each employee, to describe job opportunities, and to explore alternative development plans.

Unexpectedly, opportunity counseling was also viewed by current managers as a tool for solving some of their own problems. Managers often visited the opportunity counselor to discuss ways to maximize utilization of employee's talents and to explore solutions to problems of interpersonal relations in their work. These discussions were usually focused on individual employees.

MDD staff assumed at the beginning of its work with the cooperating company that a need existed for quite extensive employee upgrading. This assumption was not confirmed by the examination of the existing upgrading system. The company's needs, and to a large extent the employees' needs, were being met. Low employee turnover and nonexpanding work force were the two primary circumstances that worked against implementation of major training efforts.

To accommodate the study's third objective, MDD's proposed experimentation with new upgrading methods, the company agreed to increase its use of the assessment center. This provided larger numbers of employees the opportunity to participate, and allowed employees to nominate themselves for promotional consideration. Also, the company agreed to implement

formalized opportunity counseling as an individualistic approach to employee upgrading.

Section I of this report contains a summary of an interim report describing the activities and results of MOD's intervention in the company's upgrading activities. In part, the second and third objectives of this project were accomplished. Although three approaches were not tested, the most reasonable intervention strategy was.

The study's fourth objective, to obtain AEC network utilization of the promising upgrading strategy, was planned to occur during a second phase that was not funded. However, unexpended funds from Phase I were used to explore interest in employee upgrading at other AEC construction sites. Subsequent to discussions with industrial relations personnel at the AEC-Washington Headquarters, a survey of selected contractors was initiated. Interest in upgrading was expressed by 18 contractors, and a determination to conduct a utilization workshop on employee upgrading was made.

The workshop was held in Oakland, California, at the AEC area operations office. Thirteen of the 18 companies expressing interest were represented by either their respective industrial relations director, personnel director, equal employment opportunity director, or training director. Presentations and documents prepared for the workshop are included in Section II.

In summary, MOD studied existing upgrading practices in a three-plant company; the need to suggest major training efforts did not exist since the preparation for promotions was either accomplished via apprenticeship programs or on-the-job training, and advancement opportunities were limited by the exceptionally stable labor force.

Using a theoretical model against which to compare actual company practice, certain disparities¹ were found. Pragmatically, however, these disparities were not perceived by management as severe enough to warrant major change. Therefore, minor experimental activities were conducted on a pilot basis. In fact, these minor activities (the assessment center and opportunity counseling) served to correct a disparity in how supervisory candidates were selected, and has increased the pool of applicants

¹Report of Phase I, Part 1, Analysis of Upgrading Practices in an Industrial Setting, Oak Ridge Associated Universities, Oak Ridge, Tennessee, November 1972.

available for management consideration. Adoption of these two components of an upgrading system has been accomplished because they helped to fill a company need, and they are now gaining greater management acceptance.

Utilization in other companies should not be expected from a single workshop because the adoption of this small portion of an upgrading system is still very complex and requires a considerable investment of time and money. Furthermore, unless the adopting firm recognized selection of first-line supervisors as a pressing need, very little company action could be anticipated.

The utilization workshop confirmed a growing management perception of the need to move women and minorities into management positions. The assessment center and opportunity counseling approach can help in accomplishing that objective if the perceived need becomes sufficiently demanding.

ASSESSMENT CENTER: VALIDITY and UTILITY

THE VALIDITY AND UTILITY OF
SIMULATION TECHNIQUES

Paper presented at

Utilization Workshop for
Employee Upgrading

San Francisco, California

Manpower Development Division
Oak Ridge Associated Universities

THE VALIDITY AND UTILITY OF SIMULATION TECHNIQUES

Manpower Development Division staff looked closely at the operation and scoring of several simulation techniques. One of the most common questions asked is whether the method is valid. Actually, there are many questions which must be answered to demonstrate the validity of simulation techniques. The most important ones are those concerning the relationship of exercise results and external criteria of job success or predictive validity. The earliest and strongest evidence for predictive validity comes from the work done by Bray and Grant with several hundred new hires into AT&T.¹ These people were assessed using simulation techniques and then followed up several years later without the data being allowed to influence their careers in any way. The rater's predictions about who would move into middle management ranks were accurate and significantly above the chance level. There have been a whole series of validity studies done by the Bell System and other large corporations which employ the assessment center procedure. Findings from these studies further substantiate the validity of simulation techniques. In a recent article which reviewed assessment literature and focused on the predictive accuracy of the overall assessment ratings (a global variable which is common to almost all assessment programs), 18 research studies conducted from 1964 to mid-1972 consistently showed assessment performance related to several external criteria. The predictive accuracy of overall assessment rating was highest for job potential followed by progress in management or number of promotions and then job performance.²

The findings of these studies were replicated in a followup of early participants in an assessment program under MDD's sponsorship with a cooperating company. Significant correlations

were found between the overall rating and the current supervisor's ratings of performance and potential. Additionally, a high correlation was found with a number of promotions since the date of their assessment. Thus, those rated high in the assessment center had significantly more promotions since the date of their assessment. Thus, those rated high in the assessment center had significantly more promotions and higher criterion ratings than those rated low.³

Most of the research evidence seems to indicate that the assessment center produces a modest improvement in performance at the first level, but the differences in results for performance and potential seem to suggest that the management skills measured at the assessment center are more important in higher levels of supervision. This may be accounted for by the fact that lower level supervision jobs involve more technical functions and less organization and management.

Thus, one is led to conclude tentatively that simulation techniques have validity in predicting who will move ahead in an organization. Most of the studies have flaws, but there is a consistent pattern of apparent validity. This does not imply that all simulation techniques should be considered valid. Any organization adopting a simulation approach should establish empirical procedures to evaluate it. Relationships between measurements obtained in the exercises and external criteria of job effectiveness must be thoroughly investigated.

With the increasing enforcements of EEOC and OFCC guidelines, organizations must be prepared to offer proof that their selection and appraisal devices including simulation techniques are valid and job related. Perhaps because of the "rational validity" which results from the situational nature of the exercises no known charges of discrimination from application of an assessment center have been filed anywhere in the U. S.

The few studies that have attempted to collect empirical evidence of the validity of the approach for minority group members have found positive results. One author examined both one-day and three-day assessment programs at AT&T and reported that no differential validity results were found between any of the subgroups based on race and/or sex.⁴ The only other published study of differential validity dealt with assessment centers at General Electric. Of 120 whites assessed, 25% received job offers; while of 30 blacks assessed, 50% received offers.⁵ Thus, no bias in favor of whites appeared to be operating. However, validity in one organization does not necessarily imply that the procedure is valid in another, so evidence should be collected to evaluate the fairness of any assessment procedure.

Important questions as to the validity of simulation techniques exist at another level, that of face validity, that is, the acceptability of the procedure to the candidates and to management. For example, it would certainly be an undesirable consequence if low-rated candidates were sufficiently demoralized to leave the company, as this would result in the loss of well-trained, adequately performing employees. (Incidentally, the followup of 1,000 assessment center candidates at IBM showed no difference in separation rates for low and high assessed employees.⁶) One phase of evaluating the cooperating company's assessment program was a survey of the people it served (managers, supervisors and participants). The results of the survey are comparable to the experiences of many organizations.

The first part of the survey asked supervisors and department heads who had extensive contact with the program to complete a brief questionnaire pertaining to the center's general utility and to problem areas.⁷ The 32 respondents to date have all felt that the assessment center approach provided useful information.

Table 1 shows the role that assessment center results play in promotional decisions. It is quite apparent that while few supervisors or department heads rely solely on the exercise results for promotional decisions, most do take the recommendations quite seriously.

TABLE 1

Utilization of Assessment Center
Results by Managers*

Assessment center the main factor in promotional decisions	12%
Assessment center a major factor, but technical competence more important	23%
Assessment center will be a strong factor, but not the major one	50%
Used in borderline cases	15%
Not used for promotional decisions	0

*N = 32.

As well as being used in making promotional decisions, the assessment center results are being extensively used for counseling and employee development. In fact, quite a few of the supervisors and managers felt that this is the area in which the results were most useful.

The candidates' immediate supervisors were also asked to respond to questions about the assessment center's accuracy and usefulness for each employee's particular case (Table 2). In 61% of the cases, 31 of 51, the supervisors reported the assessment center was generally accurate. While eight percent thought it was extremely accurate, 14% also thought it was not accurate at all. The reason for this slightly negative attitude seems to be that some supervisors

TABLE 2

Supervisors' Report of the Accuracy
of Assessment Center Results*

Extremely accurate	8%
Generally accurate	61%
Partially inaccurate	17%
Not accurate at all	14%

*N = 51.

saw some discrepancy between the candidate's job performance and the assessment center reports, although this may certainly be expected because there are differences in the behaviors exhibited on their current jobs and the behaviors they were asked to exhibit in the assessment procedure. The most important criticism came from some of the supervisors who reported that the exercises were not as relevant for their department as they were for others; hence, they felt their employees might be at a slight disadvantage. The implication is that the simulation exercises simulated some jobs better than others. This is certainly a problem which must be contended with in any organizational setting in which simulation techniques are used to assess candidates from a wide variety of jobs. Research indicates that the assessment center can be made flexible enough so that it is valid for a variety of jobs.

Participants in the program were also surveyed concerning their impressions of the experience. Fifty-seven percent participated to date.

Ninety percent of these participants believed the assessment center procedure to be fair, and 57% felt that it allowed a chance to show their real capabilities for supervisory positions. With respect to the report which the manpower planning staff prepared for the participants' department, Table 3 summarizes the opinions

concerning the accuracy of the report. Thus, one can see that very few of the participants felt the results were inaccurate.

TABLE 3	
Participants' Estimates of Accuracy of Assessment Center*	
Extremely accurate	2%
Very accurate	47%
Fair	40%
Inaccurate	9%
Totally inaccurate	2%
*N = 45.	

An important purpose of the followup of the participants was to assess the short-term impact that the assessment center had on their perception of the company and themselves (Table 4). Most employees seemed to have a generally favorable attitude toward their employer both before and after participation. One reported a less favorable attitude, while 28% reported a more favorable one.

Did participation in the assessment center change their attitudes about themselves? Forty-four percent claimed a more favorable attitude, and 48% claimed no change, while eight percent said they have a less favorable attitude toward themselves as a result of their disappointing performance in the center. Most employees reported that they gained increased self-confidence plus some insight and a more realistic view of their capabilities. As a result of the increased attention being given them by the company, most of the participants reported that their chances for promotion had increased.

One outstanding result of the evaluation process is the fact that most employees now have a clear idea of their chances for advancement.

TABLE 4	
Impact on Attitudes	
<u>Attitude Toward Employer*</u>	
More favorable	28%
No change	72%
Less favorable	0%
<u>Attitude Toward Themselves*</u>	
More favorable	44%
No change	48%
Less favorable	8%
*N = 46.	

This is shown by the high correlation between their estimates and their supervisor's estimates of their chances for promotion. The correlation was .81, which is highly significant.

These results and others obtained in the survey tend to demonstrate that the simulation procedure has a very high acceptance and face validity among the participants, supervisors, and managers involved with the assessment center.

Two other levels of validity must also be considered. One is the utility of the techniques, that is, the advantage of using them over traditional and/or less costly methods; and the other is the identification of the performance dimensions and the reliability of the measurement procedures. These levels are concerned with a type of internal validation.

One unique feature of the assessment center procedure is the use of multiple observers or assessors whose judgments regarding the observed performance of candidates are pooled. This

clinical type of pooling makes questions of reliability somewhat more difficult to answer, since agreement between raters is reached before final ratings are recorded.

A study conducted by Michigan Bell provides the most definitive data regarding reliability of the total assessment process.⁸ The study was designed to measure reliability of candidates' performance over two assessment programs. A sample of 85 non-management employees (39 men, 46 women, 42 blacks, and 43 whites) who attended an Early Identification Assessment program were later assessed by the company's more extensive two-day assessment program. The minimum time between assessments was one month and participants in the study did not receive any feedback on their performance until after completing both programs. Independent assessment staffs were used.

The correlation between overall performance in the two programs was quite substantial for the total sample (173), as well as for each of the subgroups:

Men	- .77	Blacks	- .68
Women	- .70	Whites	- .73

This is one of the few studies which deals with consistence of assessees' performance over time.

Besides the overall rating all of the specific variable ratings collected in the two assessment programs showed significant reliability.

When contrasted with the relative invisibility of many existing promotional systems, it is apparent that assessment programs are more likely to encourage decision making about promotions to be made openly and objectively with agreed-upon standards and based on relevant systematically gathered data.

An important question is whether the less costly procedure of using standardized tests can be as effective in prediction as simulation techniques. The research to date indicates that simulation results cannot be replaced by tests but also that the use of simulation does not negate the use of tests, that is, they each may contribute substantially unique elements to the prediction of success.⁹ This leads to an important point. Situational techniques are designed to provide valid and job related information; however, there are many areas of job performance which these techniques may not reach. It has already been pointed out that technical competence is not measured by these exercises, and this may be particularly important for first-line supervision. Similarly, certain aptitudes may be important for successful job performance which can best be measured by validated tests.

Existing methods of measuring on-the-job performance can provide much useful information on technical competence and on other aspects of performance by an employee, who may have a job history in areas similar to the position for which he is being considered. The point is in comparing situational techniques to other promotional methods, it is not a matter of determining which method is the best but rather a determination should be made on the basis of the value added by each method.

When simulation techniques have been compared with paper and pencil tests used for the same purpose, they have consistently explained more variance on the criterion. When simulation techniques have been compared to sundry techniques used independently of the assessment center, the assessed group was found higher in job performance and progress in management.¹⁰ Thus, the conclusion of more researchers to date is that simulation techniques do provide unique and valuable information, particularly in the field of interpersonal behavior.

FOOTNOTES

1. Bray, D. W. and Grant, D. C. "The Assessment Center in the Measurement of Potential for Business Management." Psychological Monographs; 1966, 80 (17, whole no. 625).
2. Cohen, B. M., Moses, J. C. and Byham, W. C. "The Validity of Assessment Centers: A Literature Review." In Klinefelter J. "Assessment Center Approach: A Comprehensive Summary." Division of Research and Test Development, State of Illinois, Department of Personnel.
3. Internal Research Document, Oak Ridge Associated Universities, Manpower Development Division.
4. Moses, J. C. The Development of an Assessment Center for the Early Identification of Supervisory Potential. Personnel Psychology (in press).
5. Meyer, M. H. "Assessment Centers at General Electric." Paper presented at meeting of Development Dimensions, San Francisco, California, 1972.
6. Cited in: Kraut, A. I. "A Hard Look at Management Assessment Centers and Their Future." Personnel Journal, May 1972, 317-326.
7. "Upgrading in an Industrial Setting, Phase I, Part 2: A Pilot Test of Upgrading Models." Oak Ridge Associated Universities, Manpower Development Division.
8. Moses, Op Cit.

9. Huck, James R. "Assessment Centers: A Review of the External and Internal Validities." Personnel Psychology, V. 26, 1973, p. 191-212.
10. Cohen, Op Cit.

Simulation Techniques

- Needs to be validated
- May be misused
- Offers opportunity to observe and assess behaviors difficult to assess with other techniques
- May be more expensive than other approaches

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**ASSESSMENT CENTER:
OPERATION**

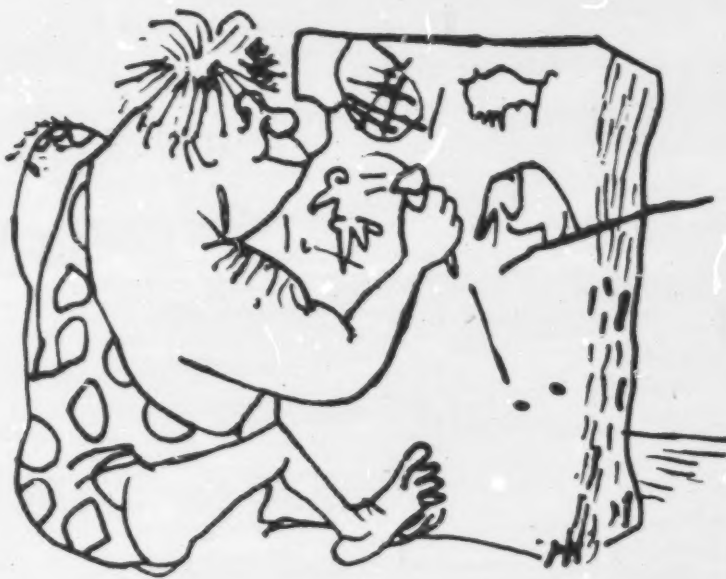
ASSESSMENT CENTER DEFINITION

An assessment center is a multiple assessment of several individuals performing a variety of group and individual exercises simulating work situations while their behavior is observed by a group of trained evaluators.

ASSESSMENT CENTER—PROGRAM OBJECTIVES

- Early and uniform selection of future supervisors.
- Supervisory training tailored to predetermined needs.
- Continuous training and development of new front-line supervisors.
- Provision of well-trained and motivated supervisory personnel to fulfill present and future plant needs.

Simulation has a long history.



We know it was used by:

German Army WWII
OSS
Army Air Corps

AT&T in the early 50's pioneered the use of Assessment Center in the selection of management.¹ Their success lead to relatively widespread use.

Companies now using Assessment Center:

AT&T-Bell System
Standard Oil of Ohio
J. C. Penney Company
Peace Corps
Caterpillar Tractor
Sears Roebuck and Company
IBM
General Electric Company
IRS
TVA
Olin-Mathieson Chemical Corporation
Wolverine Tube Company
Wickes Corporation
Union Carbide-Nuclear Division
Ford Motor
Zenith
Jewel Foods
Federal Aviation Agency

¹ Bray & Grant

This booklet explains how the Assessment Center is used for identification of first-line supervisors.



Approaches to selection now in use.

- Supervisory nomination
- Standardized (paper-pencil) tests
- Personality tests
- Acting assignments
- Simulation techniques

Supervisory Nomination

- May not be based on relevant job information
- Is not standardized across interviewers
- Personal preferences may inject biases

Standardized (Paper-Pencil) Tests

- Correlates moderately with managerial success
- Frequently subjected to misuse and misinterpretation
- Too often not validated on performance criteria
- Inexpensive to administer

Personality Tests

- Has not been shown to have strong relationship to managerial success
- Frequently subjected to misuse and misinterpretation



What do you see?

Acting Assignments

- Not always recognized as an upgrading technique
- May be misused
- Failure may permanently disqualify employee

Simulation Techniques

- Needs to be validated
- May be misused
- Offers opportunity to observe and assess behaviors difficult to assess with other techniques
- May be more expensive than other approaches

Design of an Assessment Center Program

Answer these questions:

What does a manager do?

What are the skills a manager needs?

Design a procedure which will reveal the behaviors you look for. Create situations where individuals can exhibit behavior indicative of these skills.

Decide who shall be evaluated.

EXAMPLE OF AN ASSESSMENT CENTER PROGRAM

Assessment Center Exercises

- Leaderless Group Discussions

- Assigned Role—School board exercise candidates adopt particular, competitive roles
- Nonassigned Role—Community planning problem, management consultant problem

Candidates choose own role and cooperate to achieve a common goal.

- Individual Exercise—In-Basket

Assessment Center Operations—Sequence of Events

- Referrals of candidates
- Prepanel interview of candidates
- Screening of candidates' personnel records
- Panel operation



SUPERVISOR'S REPORT

Date of Interview

May 16, 1973

Employee's Name	Badge No.	Department No.
Clarence Clyde McWilliams	38291	1079 W

Reason

Recommendation for Supervisory Panel Evaluation

Details

CSD: 6-17-69

Birth Date: 2-24-47

Marital Status: Single

Address: Hillcrest Apartments, Apt. 47
Oak Ridge, Tennessee 37830

Education: Graduate of Elmer G. Smith College

Mr. McWilliams received a bachelor of arts degree in economics from the Elmer G. Smith College of Rolling Fork, Mississippi, in May 1969. He was a candidate for Cum Laude honors and was on the Dean's List five of seven semesters.

He was employed with the Company on June 17, 1969, as a Buyer in the Purchasing Division. He transferred to the Maintenance Engineering Department on July 6, 1970, and has been serving as an Engineering Assistant.

Mr. McWilliams has conducted studies and prepared reports for the exterior and interior paint programs in the plant. He has made recommendations which have been accepted and are being implemented to improve the painting operation and decrease the total cost. He is responsible for updating and preparing new Maintenance Engineering Procedures and performs other assignments as required.

Mr. McWilliams is actively engaged in the improvement of our maintenance program through implementation of our Maintenance Management Control System.

Employee's Acknowledgement
of Receipt of Copy

Supervisor's Signature

Distribution: Employee Relations Department
File
Others as Required

Pre-Panel Interview

At this interview, the department head will describe the program to the employee and verify his interest. He will be advised that it affords an excellent opportunity to recognize individual development needs as observed by six experienced supervisors. If the employee is interested, it is essential that, before he is allowed to go before the panel, he be advised of the following:

- That his participation is entirely voluntary.
- That his participation in the program will not guarantee job advancement.
- That the results of his participation in the program will not have a lessening effect on his current position.
- That information compiled by the panel is considered Business Confidential. It will be made a part of his personnel record; but due to its confidentiality, it will be accessible to a limited number of management personnel.
- That when called before the panel (panels are scheduled irregularly), he will be participating in a full day of group and individual exercises with other employees.
- That his performance throughout the day will be closely observed and evaluated by a panel of six experienced supervisors.
- That he will be informed of the results of his performance through his line organization upon his request. The information will be given with the objective of assisting the candidate in his self development.
- That the exercises are designed to measure administrative and supervisory skills; they are not designed to determine technical competence in any vocational area.

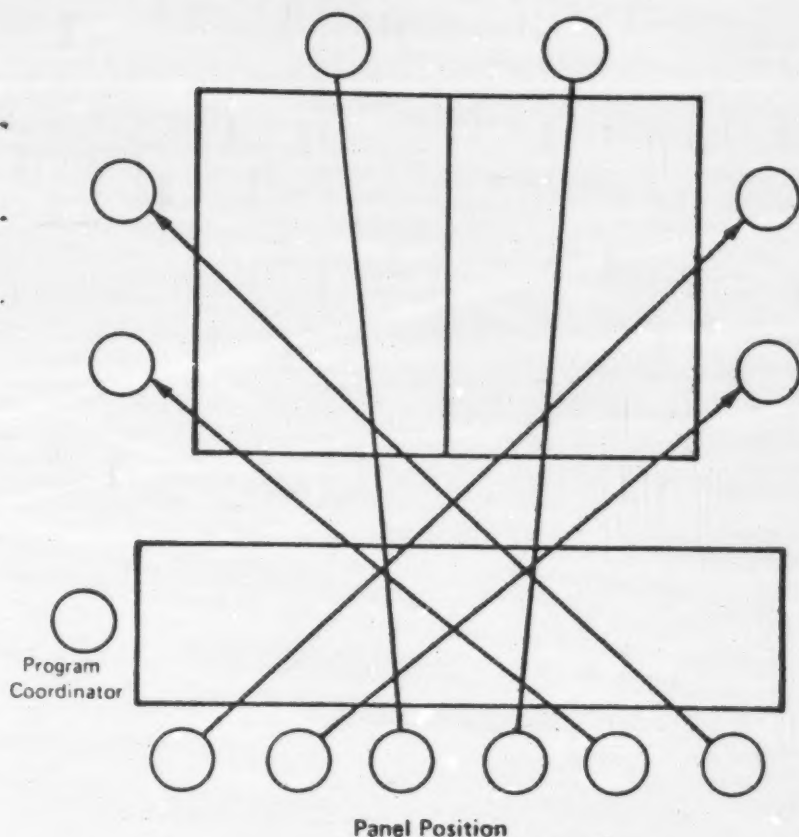
Screen and select six candidates and six trained management observers.

Typical Assessment Center Time Schedule

8:30-9:30	Exercise 1, Community Planning
9:30-10:15	Exercise 2, School Board Planning Period
10:15-10:20	Break
10:20-11:20	Exercise 2, School Board
11:20-12:00	Lunch
12:05-2:05	Exercise 3, In-Basket
2:05-2:20	Break
2:20-2:45	Exercise 3, In-Basket Interview
2:45-3:50	Exercise 4, Management Consultant Problem
3:50-4:00	Final Interview
4:00-4:15	Panelist Wrap-Up

SEATING AND OBSERVATION ARRANGEMENT

Candidates Positions



Each candidate is observed by a different panelist for each exercise—panelist is responsible for monitoring that person's behavior, specifically, while also casually observing others.

- Seating and observation arrangements assist in effective reporting of behavior.
- Candidates change positions during the day.
- Panelists complete a behavioral checklist following each Leaderless Group Discussion
- Panelists, only, meet on the second day to critique each candidate's performance.
- Primary observer explains his observation—other panelists add their comments.
- Numerical ratings are assigned on each variable for every candidate.
- An overall rating is given for each candidate's performance.
- A Program Coordinator, using evaluations and behavioral checklists, writes a final evaluation report.

**ASSESSMENT CENTER PROGRAM
FINAL EVALUATION SUMMARY**

Candidate	Date	Division	Panel Session
		Rating	Rating Scale of Candidate Performance
INFLUENCE OR LEADERSHIP — Demonstrates the ability to plan, organize, and control the group process.		4	EXCELLENT —Performance in the Assessment Center was clearly equal to or better than that which would be expected from competent first-level supervisors. No development needed to be recommended for promotion.
BEHAVIORAL FLEXIBILITY — Demonstrates the ability to accommodate arguments and behavior to the achievement of group objectives.		3	GOOD —Performance in the Assessment Center was somewhat below that which would be expected from competent first-level supervisors. Probably needs only supervisory experience to become a good supervisor—would recommend for promotion.
RELATIONSHIPS WITH PEERS — The judged relationships formed during group exercises between the individual and other group members.		2	FAIR —Performance in the Assessment Center was clearly below that which would be expected from competent first-level supervisors. Development needed in some areas before recommending for promotion.
ORAL COMMUNICATION SKILLS —Demonstrates effective delivery; is easily understood by others.		1	POOR —Performance in the Assessment Center indicated a serious lack of ability in many areas evaluated. A strong development program, followed
ACTIVITY —Judged on the amount of participation in group exercise and on productivity in the written exercise.			
PERCEPTION —Demonstrates recognition of problems in the exercise, along with an understanding of other candidates' arguments and positions, and shows insight into the interrelationships of these factors.			

Final Evaluation Summary—Page 2

	Rating	Rating Scale of Candidate Performance
ORGANIZATION AND LOGIC OF ARGUMENTS—Presents positions in a well-organized fashion and supports them with arguments which are appropriate and logical and which utilize available information.		by a re-evaluation is needed before recommendation for promotion could be considered.
WRITTEN COMMUNICATION SKILLS—Demonstrates adequate written expression of thoughts		NO NOT OBSERVED—There was not enough behavior exhibited in this area to be able to make a scale judgment.
DECISION-MAKING SKILLS—Judged on whether any erroneous or contradictory decisions were made in the written exercise.		OVERALL RATING _____
UTILIZATION OF SUBORDINATES—Judged in the written exercise by the individual's utilization of subordinates and responses to their requests.		
RESPONSES TO SUPERIORS—Judged in the written exercise by the responses of the individual to the requests and wishes of superiors.		

**OPPORTUNITY COUNSELING—
FEEDBACK TO THE CANDIDATE**

- Through the line organization—normally the department head who recommended him.
- All feedback must be presented in a constructive manner.
- The Industrial Relations Staff and Organizational Development Department will assist the line organization in making recommendations for individual development activities.
- A candidate is allowed to read the overall evaluation report and to initial the report to indicate that he has seen it.
- The supervisor who recommended the candidate for evaluation is briefed on the candidate's performance (usually done by the department head).
- A signed copy of the evaluation report is returned to the Industrial Relations Division. This form is to include the employee's reaction to his evaluation and specific development goals agreed upon with his supervision.
- Should the employee not be satisfied with the feedback by the line organization, he may request an audience with the Program Coordinator through the line organization for more detailed information on his evaluation.

OPPORTUNITY COUNSELING OBJECTIVES

- Seeks to combine a complete assessment of abilities using simulation techniques and standardized tests along with a diagnosis of the candidate's own interests and career goals.
- Employee-centered approach. Emphasis is placed on the development of career opportunities for individuals based on their own goals and abilities.

OPPORTUNITY COUNSELING INTERVIEW

- Obtain individual's reactions to the diagnostic process.
- Obtain indications of ambitions, desires, and interests.
- Review Assessment Center evaluation.
- Discuss other diagnostic instruments.
- Suggest tentative report and recommendations.

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SUMMARY OF ANALYSIS OF UPGRADING PRACTICES

Section I
UPGRADING IN AN INDUSTRIAL SETTING
SUMMARY OF FINDINGS¹

Finding productive employees is important to the economic growth of any company. Most employees search for opportunities to advance, others are content to remain where they start. A company not sensitive to employee concerns will ultimately experience management problems that seriously deter its growth and its ability to meet economic objectives. Some companies have well established systems for developing employees. However, not much is known about what these systems entail.

This reports some findings of a research effort directed at analyzing the employee upgrading practices and organizational resources utilized for upgrading in a major industrial firm. The study was conducted to determine the impact on employee upgrading of (1) management practices and beliefs about employee advancement potential; (2) training programs in the industrial facility; and (3) collective bargaining agreements and government legislation. In addition, the internal mobility of the work force was examined in order to identify career paths.

Employee development or upgrading, as it will be called in this summary, is especially critical today as a result of changes in the labor force. More women are seeking careers, more minorities and other disadvantaged persons have entered the ranks of the employed. Upgrading is also a topic of priority since equal employment opportunity legislation requires it.

¹Report of Phase I, Part 1, Analysis of Upgrading in an Industrial Setting, Oak Ridge Associated Universities, Oak Ridge, Tennessee, available upon request.

Impact of Management Practices

Through interviews with managers, the employee promotion process, including employee personal qualities considered important for advancement, was described and analyzed. Authority to promote, hire and fire was decentralized, thus advancement decisions were made or strongly influenced by an employee's immediate supervisor. As such the decisions tended to be inconsistent because supervisors held widely differing opinions about what employee characteristics lead to success. In fact, a total of 49 different clusters of characteristics were mentioned with some frequency by the firm's manager. Those employee characteristics most frequently mentioned as important included: (1) job knowledge or technical competence; (2) dependability, reliability, and attendance; (3) ability to get along with people; and (4) ability to communicate (written and oral).

Most managers did not have detailed knowledge of job openings or requirements for jobs outside their departments. They expressed a definite interest in establishing more systematic methods of matching job openings with qualified candidates.

Another factor affecting the selection process was the availability of job opening information to all potentially qualified candidates. Considering all employees at the foreman level and below, hourly employees had the most comprehensive system of obtaining job opening information, largely as a result of collective bargaining contracts. Weekly and monthly employees relied on the plant personnel departments, their supervisors, and word of mouth for information about job openings. In addition, the weekly and monthly employees usually did not have the opportunity to formally nominate themselves for a job opening.

In summary, there was a low probability that all potential candidates were considered or could nominate themselves for a position. The likelihood of non-uniform selection criteria being applied in promotional decisions was high. There were few objective means of evaluation to supplement supervisory judgment. All of these factors reduced the company's ability to provide equal opportunity for all its employees.

Impact of Training Programs

Employees responsible for training functions, both line managers and training personnel, were surveyed to determine what part formal or informal training programs had played in employee upgrading.

When the identified programs were categorized by purpose, "position training" or specialized training accounted for the majority of the programs. The general intent of these programs was to teach, or update job skills needed by employees to maintain current jobs rather than to develop skills for higher level jobs. Most supervisory training programs were also designed for employees already promoted to the supervisory ranks, rather than for presupervisory training of employees.

There were educational assistance and university study programs that were directed toward upgrading. Additionally, some divisions and department used job rotation to develop employee versatility. This gave the employee instruction in what jobs were available within the department and the skills needed to perform them. The education obtained by these formal and informal means probably increased chances for promotion.

Impact of Legislation and Collective Bargaining Agreements

National legislation and executive orders concerning nondiscrimination in employment have received wide coverage and need not be summarized here.

That this legislation has had a strong impact on company practices is illustrated by the fact that black workers approximately tripled their representation in the work force and in the number of jobs at which they worked.

Seven different contracts, involving four different unions, were in effect at any one time during the study. In response to legislation all collective bargaining agreements added an identical nondiscrimination clause: "Both the company and the union agree that the provisions of this contract shall be applied to all employees without regard to any individual's race, color, religion, sex or national origin." Additionally, apprenticeship standards prohibit discrimination on the basis of "occupationally irrelevant physical requirements."

As mentioned earlier, hourly employees (non-exempt) had a comprehensive system for obtaining job opening information. Collective bargaining contracts required posting publicly the hourly job openings, pay scale, description and qualifications. Promotion opportunities were largely predetermined by contract and seniority provisions. Thus, hourly workers, particularly those in craft apprenticeship programs, were provided with well defined career paths.

Another finding of the contract analysis was restraint on downward job bidding. This tended to limit an employee in the positions he could move to, possibly eliminating movement into positions with more promotion potential.

Two different seniority systems were in effect at different sites in this company. Under one system, an employee's seniority was determined by date of hire, and this seniority remained with the employee as he was

promoted from one job grouping to another. In the other system, seniority was determined by the employee's length of service within a job; changing from one seniority grouping to another, he lost his seniority in the former grouping and had to accumulate seniority in the new grouping. This may have had an inhibiting effect on job upgrading. Due to the provisions for "bumping" employees with lower seniority whenever layoffs are necessary, an employee would be hesitant about relinquishing even a small amount of seniority.

In general, collective bargaining contracts neither favored nor disfavored upgrading. Although they had substantial impact on upgrading, the impact was not consistent.

Impact of Employee Mobility

Analysis of employment records over an eight-year period for jobs below and including first level foreman demonstrated clearly that considerable employee upgrading had taken place. Craft occupations, particularly the machine trades, had the highest upgrading rate (as was expected). It also showed that managerial type jobs were very slow in movement, while clerical and technical occupations had slow movement jobs, but also many high movement jobs.

The search for career paths was not very fruitful. The company had no growth and extremely low turnover (about 7%), and the direction of upward movement was diffuse—not predictable from an incumbent's previous position. Further, a large number of jobs had only a few individuals in each. The small amount of movement in these jobs made it impossible to identify career paths among them. The result of this combination of facts was that only a few career paths were identified, and most of those that did exist were

defined by union contracts. Some others were in clerical areas and among laboratory technicians.

Another factor was the apparent existence of some conflict between direct hiring and in-plant promotion (a notable exception being foreman level jobs where 92% were filled through internal promotion). Also, entry port jobs were not always at the "lowest practical level."

To sum up, despite the existence of considerable employee mobility, this movement was hard to define due to the diffuse nature of the movement and factors associated with the organizational structure.

The firm studied had an employee upgrading system that placed responsibility for identifying advancement potential on first-line supervisors. The company had a written policy stating that promotion to higher level positions would occur whenever possible. Limited by the occupational structures and diversity of technician jobs not many career paths existed, yet promotions occurred. Specific preparation of employees for higher level jobs occurred through on-the-job training, while educational assistance supported broader employee development goals. The element of the upgrading system that the company desired to strengthen was the identification process of employee potential.

SUMMARY OF EXPERIMENTATION WITH UPGRADING APPROACHES

Upgrading—An Assessment Method for Enlarging the Pool of Eligible Technicians for Supervisory Positions¹

Selection of first-line supervisors has and is accomplished using a range of approaches from the "I dub thee supervisor" (because I like you) technique all the way to the "multiple hurdle testing" technique (clinical interviews, paper-pencil tests). More often than not the "I dub thee" technique is predominant. This report describes the results of an experimental use of the selection approach that falls somewhere between these two, and the usefulness of the approach as an employee upgrading tool.

Assessment Center

The selection approach tested is the assessment center which constitutes simulations of selected work-related problems encountered in supervisory jobs and measuring each candidate's responses to these problems. The simulations include group discussion and group and individual problem solving activity. A management panel observes and scores individual behavior during a full day of candidate interaction.

Opportunity Counseling

The observations and scores of candidate behavior are reported to each candidate in an individual counseling session along with aptitude and interest test scores. During the session, general and personal occupational opportunities are discussed, and plans for individual development are explored.

Experimentation with the assessment center and opportunity counseling was undertaken in order to increase the size of the pool from which new supervisors are selected, to make the selection process more objective, to communicate job and career prospects to employees, and to formulate employee development alternatives.

¹Report of Phase I, Part 2, Upgrading in an Industrial Setting, Oak Ridge Associated Universities, Oak Ridge, Tennessee, available upon request.

Assessment Center and Opportunity Counseling Evaluation

The assessment center and opportunity counseling have found ready acceptance. Apparently, management's need to make good promotional decisions, and the need of the employees' to make sound career decisions made both groups receptive to a means of obtaining more objective information. The evaluation of the assessment center was accomplished by surveying the people it serves (managers, supervisors and participants) and by examining the interrelationships of the different exercises and dimensions to determine whether they correspond to each other in reasonable ways. Managers were asked to rate the frequency with which the center provided useful information. The average rating was three, which meant that the center usually provided useful information on a four-point scale. No respondent checked lowest of the four categories. The ways in which this information is perceived and put to use by managers is best summarized in their own comments. "It gives the supervisor an independent objective view of the candidate, helps the candidate realize his strong and weak points, the employee is given an outside evaluation of his skills, prevents political promotion." A slight majority of the managers felt that the center's results were useful primarily in the area of making promotional decisions, while a slightly smaller number perceived results as most useful in employee development. Approximately half of the managers stated that assessment center results would be a strong factor in determining promotion, but not the major one. Ninety percent of the employees who participated in the assessment center believed the process to be fair, and 57% felt that it allowed a chance to show their real capabilities for supervisory positions. The judgments of managers and participants support the value of the assessment center process. First-line supervisors were slightly less enthusiastic because they were more impressed with occasional disagreements with assessment results; however, they too found it to be a source of information not otherwise available.

All three groups—managers, supervisors, participants—made comments showing insight into the assessment center process. These comments are

expected to serve an important role in further development of the assessment center. An analysis of the scoring procedures and dimensions on which behavior was rated revealed a high degree of interrelatedness or correlation. It was concluded that the complexity of the dimensions accounted for a great deal of the correlation and that revision and simplification of the dimensions could make them more distinct and useful.

Paper and pencil tests provided additional information that was essential in opportunity counseling. Aptitudes and interests of each employee were, on the basis of their judgments, quite accurately reflected, and their systematic measurement made a discussion of career goals and career planning more easily conducted.

Opportunity counseling, which was wholly voluntary, was very well received. Participants showed great interest in the process, and it apparently stimulated serious discussion of personal career plans. It also gave employees an opportunity to put into a formal record relevant career information. Once the instruments used in the counseling process (assessment center, standardized tests, and interviews) have been thoroughly validated, a sound basis will exist for further development of specific training programs.